Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

DOC Exemption Letter In EUR File

Federal Information
Processing Standards Publication __
____, 1970

Announcing the Standard for

SUBSETS OF THE STANDARD CODE
FOR INFORMATION INTERCHANGE

Federal Information Processing Standards Publications are issued by the National Bureau of Standards under the direction of the Bureau of the Budget in accordance with the provisions of Public Law 89-306 and Bureau of the Budget Circular No. A-86.

Name of Standard. Subsets of the Standard Code for Information Interchange (FIPS __).

Category of Standards. Hardware Standard, Interchange Codes and Media.

Explanation. Subsets of 95, 64 and 16 graphic characters are provided in this standard. These are derived from the Federal Standard Code for Information Interchange (FIPS 1) which in turn was adopted from the USA Standard Code for Information Interchange (ASCII, USA Standard X3.4 - 1967).

The memorandum of the Secretary of Commerce on "Application of Federal ADP Code and Media Standards" dated March 7, 1969, contained in FIPS PUB 7, states in paragraph 5c: "If the full character set of ASCII cannot be applied, the largest possible character subset should be used, and the ASCII collating sequence observed." That memorandum also states, in paragraph 8b: "Use of one or more of these ASCII subsets is a powerful tool in bridging the conversion gap prior to the procurement or utilization of hardware with full ASCII capability." This FIPS PUB amends FIPS PUB 7 by requiring one of the three specific subsets described herein when a subset is used. It is emphasized that the coded representation of the 95 character subset, the 64 character subset and the 16 character subset in input/output media and data communications will conform to the specifications cited in other applicable Federal Information Processing Standards.

Approving Authority. Bureau of the Budget

Maintenance Agency. Department of Commerce, National Bureau of Standards (Center for Computer sciences and Technology).

Cross Index.
a. FIPS PUB 1, Code for Information Interchange
b. FIPS PUB 7, Implementation of the Code for Information Interchange and Related Media Standards

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Applicability. These character subsets are intended to be used in those systems or applications that do not require the full 128 character set contained in FIPS 1. The use of the 64 or 16 character graphic subsets in lieu of the full set of 95 graphics, where appropriate, can result in advantageous combinations of increased speed of printing or display, decreased costs, decreased complexity, and efficient manipulation.

Implementation Schedule. All equipment brought into the Federal inventory (six months after the publication date of this standard) which utilizes a character subset less than that provided by the 128 character set of FIPS 1 must conform to one of the specified subsets provided herein. This requirement applies to the equipment acquired even though the use within any given application may in fact use less characters than specified in the applicable subset. In instances where deviations from this standard are considered necessary, the waiver provisions contained in FIPS PUB 7 apply.

Specifications. Federal Information Processing Standard __ (FIPS __), Subsets of the Standard Code for Information Interchange, (date) (affixed).

Qualifications.

Compatibility with Full Character Set: Systems and applications employing standard character subsets should experience no difficulty in forwarding information via standard media or communications, to systems employing the full 128 character set.

Subset Recording: Systems and applications employing standard character subsets, will use the standard media and the standard code for recording the characters of the subset in input/output and interchange operations. Two (2) input/output media standards have been approved as Federal Information Processing Standards (FIPS 2 and 3). The adoption of additional input/output media standards will be announced in future FIPS PUBS.

Where to Obtain Copies of the Standards.

a. Copies of this publication are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Refer to Federal Information Processing Standards Publication __ (Price __ cents a copy).

b. This publication may be copied and locally reproduced to meet agency requirements.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Federal Information
Processing Standard ___
Date _____

Specifications For

Subsets of the Standard Code
for Information Interchange

1. Name of Standard. Subsets of the Standard Code for Information Interchange

2. Category of Standard. Hardware Standard Interchange Codes and Media

3. Specifications. This specification provides standard subsets of the Code for Information Interchange (FIPS 1). Each subset is defined in detail in separate sections of this specification which follow.

   Section 1 - 95 Character Graphic Subset
   Section 2 - 64 Character Graphic Subset
   Section 3 - 16 Character Graphic Numeric Subset

4. Appendix. Factors which were considered in the establishment of these subsets are explained in an appendix to this specification. Also information is provided concerning the employment of these subsets in computers and devices based on internal codes of four or six bits.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Section 1

Specifications for 95 Character Graphic Character Subset

Explanation. This graphic character subset is derived from the Federal Standard Code for Information Interchange (FIPS 1) which in turn was adopted from the USA Standard Code for Information Interchange (ASCII). This character subset is intended to be used in those systems or applications whose needs are adequately served by a 95 character graphic subset of the standard 128 character set contained in FIPS 1. Figure 1 shows the 7-bit code table of FIPS 1 with the 95 character graphic subset of this standard outlined. It is emphasized that the coded representation of this 95 character subset in input/output media and data communications will conform to the specifications cited in other applicable Federal Information Processing Standards.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Standard 95 Character Subset:

Code Table Position in FIPS 1 Column/Row	Symbol	Character Name
2/0	SP	Space (Normally Non-Printing
2/1	!	Exclamation Point
2/2	"	Quotation Marks (Diaeresis)
2/3	#	Number Sign
2/4	$	Dollar Sign
2/5	%	Percent
2/6	&	Ampersand
2/7	'	Apostrophe (Closing Single Quotation Mark; Acute Accent)
2/8	(	Opening Parenthesis
2/9	)	Closing Parenthesis
2/10	*	Asterisk
2/11	+	Plus
2/12	,	Comma (Cedilla)
2/13	-	Hyphen (Minus)
2/14	.	Period (Decimal Point)
2/15	/	Slant
3/0	0	Zero

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Column/Row	Symbol	Character Name
3/1	1	One
3/2	2	Two
3/3	3	Three
3/4	4	Four
3/5	5	Five
3/6	6	Six
3/7	7	Seven
3/8	8	Eight
3/9	9	Nine
3/10	:	Colon
3/11	;	Semicolon
3/12	<	Less Than
3/13	=	Equals
3/14	>	Greater Than
3/15	?	Question Mark
4/0	@	Commercial At
4/1 to 5/0	A to Z	
5/11	[	Opening Bracket
5/12	\	Reverse Slant
5/13	]	Closing Bracket
5/14	^	Circumflex
5/15	_	Underline
6/0	`	Grave Accent (Opening Single Quotation Mark)

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Column/Row	Symbol	Character Name
6/1 to 7/10	a to z	
7/11	{	Opening Brace
7/12	|	Vertical Line
7/13	}	Closing Brace
7/14	~	Overline (Tilde; General Accent)

Note: Use of certain of the above characters as diacritical marks is defined in Appendix A of the Code for Information Interchange (FIPS 1).

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

FEDERAL STANDARD CODE FOR INFORMATION INTERCHANGE

FIPS-1 – SHOWING 95 CHARACTER GRAPHIC SUBSET

b_7 b_6 b_5 →					0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
8 bits	b_4 ↓	b_3 ↓	b_2 ↓	b_1 ↓	Column → / Row ↓	0	1	2	3	4	5	6	7
	0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
	0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
	0	0	1	0	2	STX	DC2	"	2	B	R	b	r
	0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
	0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
	0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
	0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
	0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
	1	0	0	0	8	BS	CAN	(	8	H	X	h	x
	1	0	0	1	9	HT.	EM	)	9	I	Y	i	y
	1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
	1	0	1	1	11	VT	ESC	+	;	K	[	k	{
	1	1	0	0	12	FF	FS	,	<	L	\	l	|
	1	1	0	1	13	CR	GS	–	=	M	]	m	}
	1	1	1	0	14	SO	RS	.	>	N	^	n	~
	1	1	1	1	15	SI	US	/	?	O	_	o	DEL

FIGURE 1.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Section 2

Specifications for 64 Character Graphic Character Subset

Explanation. This graphic character subset is derived from the Federal Standard Code for Information Interchange (FIPS 1) which in turn was adopted from the USA Standard Code for Information Interchange (ASCII). This character subset is intended to be used in those systems or applications whose needs are adequately served by a 64 character graphic subset of the standard 128 character set contained in FIPS 1. Figure 2 shows the 7-bit code table of FIPS 1 with the 64 character graphic subset of this standard outlined. It is emphasized that the coded representation of this 64 character subset in input/output media and data communication will conform to the specifications cited in other applicable Federal Information Processing Standards.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Column/Row	Symbol	Character Name
3/0	0	Zero
3/1	1	One
3/2	2	Two
3/3	3	Three
3/4	4	Four
3/5	5	Five
3/6	6	Six
3/7	7	Seven
3/8	8	Eight
3/9	9	Nine
3/10	:	Colon
3/11	;	Semicolon
3/12	<	Less Than
3/13	=	Equals
3/14	>	Greater Than
3/15	?	Question Mark
4/0	@	Commercial At
4/1	A	
to	to	
4/15	O	
5/0	P	
to	to	
5/10	Z	

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Column/Row	Symbol	Character Name
5/11	[	Opening Bracket
5/12	\	Reverse Slant
5/13	]	Closing Bracket
5/14	^	Circumflex
5/15	_	Underline

Note: Use of certain of the above characters as diacritical marks is defined in Appendix A of the Code for Informaiton Interchange (FIPS 1).

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

FEDERAL STANDARD CODE FOR INFORMATION INTERCHANGE FIPS-1 SHOWING 64-CHARACTER GRAPHIC SUBSET

Bits b_7 b_6 b_5 →					0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b_4 ↓	b_3 ↓	b_2 ↓	b_1 ↓	Row ↓ / Column →	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	|
1	1	0	1	13	CR	GS	—	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	_	o	DEL

FIGURE 2.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Special Information

Systems and applications employing this 64 character set, when receiving information via standard media or communications from systems employing the full 95 character set should make provision to "fold over" the characters in columns 6 and 7 (except Delete) into the corresponding positions of columns 4 and 5. Any lower case letters received will print or display as upper case letters. This feature is desirable in most instances, but is not mandatory for applications requiring some other interpretation of the characters in column 6 and 7.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Section 3

Specifications for 16 Character Graphic Numeric Subset

Explanation. This numeric subset is derived from the Federal Standard Code for Information Interchange (FIPS 1) which in turn was adopted from the USA Standard Code for Information Interchange (ASCII). This subset is intended to be used in those systems or applications whose needs are adequately served by a 16 character numeric subset of the standard 128 character set contained in FIPS 1. Figure 3 shows the 7-bit code table of FIPS 1 with the 16 character graphic subset of this standard outlined. It is emphasized that the coded representation of this 16 character subset in input/output media and data communications will conform to the specifications cited in other applicable Federal Information Processing Standards.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Standard Character Subset:

Standard Code Table Position Column/Row	Symbol	Character Name
3/0	0	Zero
3/1	1	One
3/2	2	Two
3/3	3	Three
3/4	4	Four
3/5	5	Five
3/6	6	Six
3/7	7	Seven
3/8	8	Eight
3/9	9	Nine
2/10	*	Asterisk
2/11	+	Plus
2/12	,	Comma
2/13	-	Hyphen (Minus)
2/14	.	Period (Decimal Point)
2/15	/	Slant

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Special Information

Systems and applications employing this limited 16 character set, when receiving information via standard media or communications from systems employing the full 128 character set, the 95 character graphic set or the 64 character graphic subset, should ignore all characters outside of this numeric subset. This feature is desirable in most instances, but is not mandatory for applications requiring some other interpretation of the characters outside of this numeric subset.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

FEDERAL STANDARD CODE FOR INFORMATION INTERCHANGE
FIPS-1
SHOWING 16 CHARACTER NUMERIC SUBSET

Bits b_4	b_3	b_2	b_1	Row ↓ / Column →	0 (000)	1 (001)	2 (010)	3 (011)	4 (100)	5 (101)	6 (110)	7 (111)
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	|
1	1	0	1	13	CR	GS	—	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	_	o	DEL

FIGURE 3.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Appendix

The Code for Information Interchange (FIPS 1) contains 128 characters of which 95 in the last six columns (columns 2 through 7) are designated as a graphic subset. Contained in this graphic subset are two cases (upper and lower) of the alphabetic letters A through Z, the numerals 0 through 9, and common punctuation, mathematical and business symbols.

Not all applications have need for the full 128 characters contained in the standard code set. Some require only the graphics (95 characters). Others need only use a single case alphabet, the numbers, and certain special symbols (64 characters). Further, some applications dealing with data of a mathematical or numeric nature need only the numerics and certain mathematical symbols (16 characters).

Accordingly, it is necessary to recognize the economies to be achieved in providing adequate subsets of the standard code which are consistent with the requirements of these various applications. Likewise, it is essential in order to facilitate the interchange of data and equipment within Federal government that a family of discrete subsets be identified and standardized. The consequences and costs of an unlimited number of subsets are of such a magnitude that it is reasonable and practical to establish a limited group of subsets which meet most data systems requirements. This fundamental consideration was taken into account in the development of the standard code for information interchange. Characters were positioned in the Code in such a manner as to facilitate the identification and use of subsets. Columns 2 through 7 form the 95 character graphic subset. Columns 2 through 5 provide a 64 character subset and the ten numerals in column 3 and the six mathematical symbols at the bottom of column 4 provide 16 character numeric subset. (These six mathematical symbols were placed in column 2 instead of column 3 so that they would collate lower than the numerals in the context of the full character set. Also they were assigned to the bottom of the column so that their low order four bits are distinct from the low order four bits of the ten numerals, in order to be distinguishable in those instances where numerics are coded by four bits in internal machine environments without further manipulation.)

It is also recognized that many computers and devices already in the Federal inventory and even some new equipment are based upon an internal code of four or six bits. In these instances the standard code can be represented internally by six bits by suppressing bit b6 and can be represented by four bits by suppressing bits b7, b6, and b5. These limited internal representations are then expanded to the standard seven bits when transmitting data to other devices.

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

SENDER WILL CHECK CLASSIFICATION TOP AND BOTTOM

	UNCLASSIFIED		CONFIDENTIAL		SECRET

OFFICIAL ROUTING SLIP

TO	NAME AND ADDRESS	DATE	INITIALS
1	DD/S Deputy Director for Support	WWS	11/12
2			
3	SSS / DDS 12	NOV 1969	
4			
5			
6			

	ACTION		DIRECT REPLY		PREPARE REPLY
	APPROVAL		DISPATCH		RECOMMENDATION
	COMMENT		FILE		RETURN
	CONCURRENCE		INFORMATION		SIGNATURE

Remarks:

For review and direct response in coordination with interested elements and PPB. Please note comments are requested as soon as possible but no later than 1 Jan. 1970.

25X1A

cc: PPB

1-3 Your action

FOLD HERE TO RETURN TO SENDER

FROM: NAME, ADDRESS AND PHONE NO.	DATE
EA/Executive Director-Compt. [redacted]	10 Nov 69

Approved For Release 2002/01/29 : CIA-RDP78-04723A000100150004-6

	UNCLASSIFIED		CONFIDENTIAL		SECRET

FORM NO. 237 Use previous editions
1-67

GPO : 1968 O - 297-542

(40)